

A

Special
Bacteriology
2019

Instructions:

1. All objective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
2. Any cuttings or overwriting in answering the objective part will not be accepted and no marks will be given even if the answer is correct.

Date: _____

1. A 28 year old woman presents to her gynecologist with complaints of malodorous vaginal discharge. Upon examination the physician notices a thin gray vaginal discharge with no vaginal redness. A whiff test was positive for fishy odor. Which of the following consistent with this case?
 - a. Clue cells
 - b. Gram negative diplococci in PMNS
 - c. Koilocytic cells
 - d. Owl-eye inclusions
 - e. Tzanck smear
2. A food commonly associated with Bacillus cereus food poisoning is?
 - a. Baked potatoes
 - b. Reheated fried rice
 - c. Honey
 - d. Green beans
 - e. Hot rice
3. Tetanus toxin (tetanospasmin) is responsible for blockage of which of the following inhibitory neurotransmitter?
 - a. Acetylcholine
 - b. Protective antigen
 - c. Glycine and GABA
 - d. Proteins
 - e. Activation of acetylcholine esterase
4. A shepherd presented to the dermatology department with painless ulcer with black eschar on his hand. He had history of trauma a few days back. Which of the following Gram positive rod, also used for bioterrorism is the most likely causative agent?
 - a. Bacillus anthracis
 - b. Clostridium tetani
 - c. Bacillus cereus
 - d. Clostridium perferingens
 - e. Corynebacterium diphtheriae

12. A young male was received in emergency with signs and symptoms of sexually transmitted disease. Neisseria gonorrhoea was among the top differentials. Which of the following is the selective media for Neisseria gonorrhoeae?

- a. Nutrient agar
- b. Alkaline peptone water
- c. Blood agar
- d. Thayer Martin Medium
- e. Brain heart infusion

13. A student developed food poisoning after having dinner at a new restaurant. He had fever, nausea and vomiting. A toxin of staphylococcus aureus was suspected to be the causative agent. Which of the following is not a toxin of this organism?

- a. Exfoliative toxin
- b. Lipid A
- c. Toxic shock syndrome toxin
- d. Enterotoxin
- e. Alpha toxin

14. Gram staining of a positive blood culture revealed Gram positive cocci. Staphylococcus aureus was suspected to be the causative agent. Which of the following is not an enzyme produced by this organism?

- a. Oxidase
- b. Catalase
- c. Coagulase
- d. DNase
- e. hyaluronidase

15. A young boy having a history of nasal surgery, developed intense erythema with subsequent desquamation, especially of the palms and soles and a state of confusion. He also has had headache, muscle aches, and abdominal cramps with diarrhea. His systolic blood pressure was less than 90 mm Hg. Nasal examination showed having a nasal pack in his nose. His kidney function tests (serum creatinine 2.2 times normal) were abnormal, indicating mild renal failure. His illness is likely to be caused by which of the following organism?

- a. S. aureus
- b. S. epidermidis
- c. Str. Saprophyticus
- d. Str. Agalactiae
- e. Enterococci

16. A young female presented with signs and symptoms of urinary tract infection. Urine culture revealed Gram positive cocci, which test distinguishes S. epidermidis from Staph. saprophyticus?

- a. Catalase test
- b. Optochin sensitivity test
- c. Coagulase test
- d. DNase test
- e. Novobiocin sensitivity test

17. A young female after trauma during a dental procedure, developed infective endocarditis. Which of the following is an Alpha hemolytic, optochin resistant bacterium is responsible for her disease?

- a. Staphylococcus aureus
- b. Streptococcus pyogenes
- c. Streptococcus agalactiae
- d. Streptococcus viridans
- e. Streptococcus pneumoniae



Department of Pathology
Azra Naheed Medical College
Grand Test-3, 4th Feb 2020
MBBS 3rd Year (MCQ)
(Special Bacteriology-I)

Time Allowed: 20 min

Total Marks: 20

Name: Faiq
Roll No: F17-010
Date: _____

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- A 28-year-old woman presents to her gynecologist with complaints of malodorous vaginal discharge. Upon examination the physician notices a thin gray vaginal discharge with no vaginal redness. A whiff test was positive for fishy odor. Which of the following is an important cause of bacterial vaginosis?
 a. *Lactobacillus vaginalis*
 b. *Micromonas vaginalis*
 c. *Candida albicans*
 d. *Staphylococcus saprophyticus*
 e. *Neisseria gonorrhoeae*
- Which of the following bacteria are not associated with food poisoning?
 a. *Staphylococcus aureus*
 b. *Staphylococcus epidermidis*
 c. *Clostridium botulinum*
 d. *Bacillus cereus*
 e. *Clostridium perfringens*
- A patient after a road traffic accident presented with spastic paralysis. Considering this in view, the release of GABA and glycine are inhibited by which bacteria?
 a. *Clostridium tetani*
 b. *Clostridium perfringens*
 c. *Corynebacterium diphtheriae*
 d. *Clostridium botulinum*
 e. *Clostridium difficile*
- A shepherd presented to the dermatology department with a painless ulcer with black eschar on his hand. He had a history of trauma a few days back. Which of the following Gram-positive rod, also used for bio-terrorism is the most likely causative agent?
 a. *Bacillus anthracis*
 b. *Clostridium tetani*
 c. *Bacillus cereus*
 d. *Clostridium perfringens*
 e. *Corynebacterium diphtheriae*
- A neonate developed meningitis one week after birth. Mother had history of ingestion of unpasteurized cheese. Gram staining of CSF revealed Gram-positive rods having tumbling motility. He was suspected to have neonatal meningitis. Which one of the following organisms is not a cause of neonatal meningitis?
 a. *Neisseria meningitidis*
 b. *Listeria monocytogenes*
 c. *Streptococcus agalactiae*

coli
None of the above

A middle aged man developed hard, non-tender swelling at the angle of mandible, having draining pus through sinus tracts. Pus from draining sinus revealed Gram-positive branching rods with presence of hard, lobulated, sulfur granules. What is the most likely causative agent?

- a. Nocardia
- b. Actinomyces israelii
- c. Bacillus anthracis
- d. Clostridium difficile
- e. Staphylococcus aureus

7. A patient presented with pseudo-membranes in the throat leading to respiratory distress. On Gram staining the organisms had Chinese letter appearance. What is the most probable causative agent?

- a. Nocardia
- b. Clostridium difficile
- c. Bacillus anthracis
- d. Corynebacterium diphtheriae
- e. Listeria monocytogenes

8. A chronic diabetic patient had to go for amputation of his foot after he developed gas gangrene. The organism isolated from the pus was a gram positive rod, showing double zone of hemolysis on blood agar. Name the causative agent:

- a. Clostridium difficile
- b. Corynebacterium diphtheriae
- c. Clostridium perfringens
- d. Clostridium botulinum
- e. Bacillus anthracis

9. A 40 years old woman developed flaccid paralysis. She was very fond of canned vegetables and fruits. The most likely cause of her illness is:

- a. Clostridium botulinum toxin blocking the release of acetylcholine
- b. Endotoxin
- c. Clostridium tetani toxin acting on adrenergic receptors
- d. Clostridium difficile toxin acting on acetylcholine receptors
- e. Clostridium perfringens toxin acting on neuromuscular junction

10. A 20-year-old man has a swollen, red, hot, tender ankle, accompanied by a temperature of 100°F for the past 2 days. There is no history of trauma. Gram-negative diplococci in joint fluid aspirate seen. Which of the following is the causative agent?

- a. Staphylococcus aureus X
- b. Enterococcus
- c. Streptococcus pyogenes X
- d. Neisseria gonorrhoeae
- e. Streptococcus epidermidis X

11. A 25 year old woman was well until the sudden onset of fever and neck stiffness with several skin lesion (purpura). The lesions are scattered over body and are not raised. Her blood pressure is 80/50. Blood culture grew gram negative diplococci. Which is the most likely agent?

- a. Neisseria meningitidis
- b. E. coli
- c. Streptococcus pneumoniae X
- d. Listeria X

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A group of children predominate lesion

a. E. coli
b. Chik
c. Staph
d. Strept
e. Bacillus

days ago, summer
pus sunk

phle

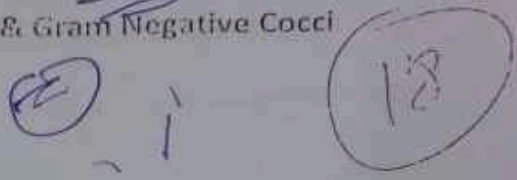
Immunology Central
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 Special bacteriology
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 M. Rizwan
 Arsalan Bhatti
 F17-063

Test

SPECIAL BACTERIOLOGY I

Gram Positive Cocci/Rods & Gram Negative Cocci

STUDENT NAME: ~~Arsalan Bhatti~~
 MAXIMUM MARKS: 55 MARKS
 MARKED OBTAINED:
 TIME ALLOWED: 60 MINUTES



1. An 11-year-old boy develops a mili fever and pain in his upper arm. A radiograph of his arm shows a lytic lesion (dissolution) in the upper part of the humerus with periosteal elevation over the lesion. The patient is taken to surgery, where the lesion is debrided (dead bone and pus removed). Culture from the lesion yields gram-positive cocci. A test shows that the organism is a Staphylococcus and not a Streptococcus. Based on this information, you know the organism is:

- a. Susceptible to nafcillin
- b. β -Lactamase positive
- c. A producer of protein A
- d. Encapsulated
- e. Catalase positive

Catalase positive

2. A 36-year-old male patient has an abscess with a strain of Staphylococcus aureus that is β -lactamase positive. This indicates that the organism is resistant to which of the following antibiotics?

- a. Penicillin G, ampicillin, and amoxicillin
- b. Trimethoprim-sulfamethoxazole
- c. Erythromycin, clarithromycin, and azithromycin
- d. Vancomycin
- e. Cefazolin and ceftaxime

Penicillinase

Penicillinase
Penicillin, ampicillin, amoxicillin
Penicillin

Penicillin
Ampicillin
Pipercillin

3. A group of six children younger than 8 years of age live in a semitropical country. Each of the children has several crusted weeping skin lesions of impetigo (pyoderma). The lesions are predominantly on the arms and faces. Which of the following microorganisms is a likely cause of the lesions?

- a. Escherichia coli
- b. Chlamydia trachomatis
- c. Staphylococcus aureus
- d. Streptococcus pneumoniae
- e. Bacillus anthracis

Staphylococcus aureus
Staphylococcus aureus

Staphylococcus aureus

4. Seven days ago, a 27-year-old medical student returned from Central America, where she had spent the summer working in a clinic for indigenous people. Four days ago, she developed an erythematous sunburn-like rash, headache, muscle aches, and abdominal cramps with diarrhea.

Staphylococcus aureus

ARSLAN
F17-063

Her blood pressure is 70/40 mm Hg. Pelvic examination shows she is having her menstrual period with a tampon in place; otherwise, the pelvic examination is normal. Her kidney function test (serum urea nitrogen and creatinine) results are abnormal, indicating mild renal failure. A blood smear for malaria is negative. Her illness is likely to be caused by which of the following?

- a. A toxin that results in greatly increased levels of intracellular cyclic adenosine monophosphate (cAMP)
- b. A toxin that degrades sphingomyelin
- c. A toxin that binds to the class II major histocompatibility complex (MHC) and act as superantigen
- d. A two-component toxin that forms pores in white blood cells and increases cation permeability
- e. A toxin that blocks elongation factor 2 (EF2)

! almost!

5. A 16 year old bone marrow transplant patient has a central venous line that has been in place for 2 weeks. He also has a urinary tract catheter, which has been in place for 2 weeks as well. He develops fever while his white blood cell count is very low and before the transplant has engrafted. Three blood cultures are done, and all grow Staphylococcus epidermidis. Which one of the following statements is correct?

- a. The Staphylococcus epidermidis organisms are likely to be susceptible to penicillin G.
- b. The Staphylococcus epidermidis organisms are likely to be from the surface of the urinary tract catheter.
- c. The Staphylococcus epidermidis organisms are likely to be resistant to vancomycin.
- d. The Staphylococcus epidermidis organisms are likely to be from a skin source.
- e. The Staphylococcus epidermidis organisms are likely to be in a biofilm on the central venous catheter surface.

doubt

6. Which of the following statements regarding the role of protein A in the pathogenesis of infections caused by Staphylococcus aureus is correct?

- a. It is responsible for the rash in toxic shock syndrome.
- b. It converts hydrogen peroxide into water and oxygen.
- c. It is a potent enterotoxin.
- d. It is directly responsible for lysis of neutrophils.
- e. It is a bacterial surface protein that binds to the Fc portion of IgG.

bacterial surface

7. Which of the following staphylococcal organisms does not produce coagulase and has been implicated in urinary tract infections?

- a. Staphylococcus intermedius
- b. Staphylococcus epidermidis
- c. Staphylococcus saprophyticus
- d. Staphylococcus hominis
- e. Staphylococcus hemolyticus

Staphylococcus

Staphylococcus saprophyticus

Staphylococcus epidermidis

methicillin resistance
Staphylococcus

8. All of the following are important infection control strategies in containing spread of MRSA in hospitals except:

- a. Aggressive hand hygiene
- b. Routine surveillance for nasal colonization among high risk individuals
- c. Contact isolation for patients who are colonized or infected with MRSA
- d. Routine antimicrobial prophylaxis for all patients hospitalized for more than 48 hours
- e. Aseptic management of skin lesions

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9. A 48-year-old alcoholic man is admitted to a hospital because of stutter. He is unkempt and homeless and lives with other homeless people, who called the authorities when he could not be easily aroused. His temperature is 38.5°C, and his blood pressure 125/80 mm Hg. He moans when attempts are made to amuse him. He has positive Kernig and Brudzinski signs, suggesting meningeal irritation. Chest radiography shows left lower lobe lung consolidation. An endotracheal aspirate yields rust-colored sputum. Examination of a Gram-stained sputum smear shows numerous polymorphonuclear cells and gram-positive lancet-shaped diplococci. Based on this information, the likely diagnosis is

- a. Pneumonia and meningitis caused by Staphylococcus aureus
- b. Pneumonia and meningitis caused by Streptococcus pyogenes
- c. Pneumonia and meningitis caused by Streptococcus pneumoniae
- d. Pneumonia and meningitis caused by Enterococcus faecalis
- e. Pneumonia and meningitis caused by Neisseria meningitidis

10. An 8-year-old boy develops a severe sore throat. On examination, a grayish-white exudate is seen on the tonsils and pharynx. The differential diagnosis includes group A streptococcal infection, Epstein-Barr virus infection, severe adenovirus infection, and diphtheria. The cause of the boy's pharyngitis is most likely

- a. A catalase-negative gram-positive coccus, Streptococcus pyogenes
- b. A single-stranded positive-sense RNA virus
- c. A catalase-positive gram-positive coccus that grows in grape-like clusters
- d. Staphylococcus epidermidis
- e. A double-stranded RNA virus

11. Important methods for classifying and speciating streptococci are

- a. Agglutination using antisera against the cell wall group specific substance
- b. Biochemical testing
- c. Hemolytic properties (α -, β -, nonhemolytic)
- d. Capsular swelling (quellung) reaction

e. All of the above

Handwritten note: *Handwritten note: "All of the above" with a checkmark.*

12. All of the following statements regarding capsule of S pyogenes are correct except:

- a. It is responsible for the mucoid appearance of the colonies in vitro.
- b. It is antiphagocytic.
- c. It binds to CD44 on human epithelial cells.
- d. It is an important virulence factor.

e. Vaccine against the capsule is currently available.

13. An 8-year-old girl develops chorea with rapid uncoordinated facial tics and involuntary purposeless movements of her extremities, strongly suggestive of acute rheumatic fever. She has no other major manifestations of rheumatic fever (carditis, arthritis, subcutaneous nodules, skin rash). The patient's throat culture is negative for Streptococcus pyogenes (group A streptococci). However, she, her brother, and her mother all had sore throats 2 months ago. A test that if positive would indicate recent S pyogenes infections is

- a. Antistreptolysin S antibody titer
- b. Polymerase chain reaction for antibodies against M protein
- c. ASO antibody titer
- d. Esculin hydrolysis
- e. Antihyaluronic acid antibody titer

Handwritten marks: *Handwritten marks: "W" and "D" with checkmarks.*

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14. Enterococci can be distinguished from non-enterococcal group D streptococci on the basis of which of the following characteristics?

- a. γ -Hemolysis
- b. Esculin hydrolysis
- c. Growth in 6.5% NaCl
- d. Growth in the presence of bile
- e. Gram stain morphology

Growth in 6.5% NaCl
Growth in 6.5% NaCl

15. The inhabitants of a group of small villages in rural sub-Saharan Africa experienced an epidemic of meningitis. Ten percent of the people died, most of them younger than the age of 15 years. The microorganism that most likely caused this epidemic was:

- a. Streptococcus agalactiae
- b. Escherichia coli K1
- c. Haemophilus influenzae
- d. Neisseria meningitidis
- e. West Nile virus

Neisseria meningitidis

16. Which of the following cell components produced by Neisseria gonorrhoeae is responsible for attachment to host cells?

- a. Lipo-oligosaccharide
- b. Pili (fimbriae)
- c. IgA protease
- d. Outer membrane porin protein
- e. Iron-binding protein

Pili Pili
pili pili

17. A 25-year-old sexually active woman presents with purulent vaginal discharge and dysuria 7 days after having unprotected sexual intercourse with a new partner. Gram negative diplococci are the top differentials. Of the choices below, what is the most sensitive diagnostic method for determining the likely etiologic agent?

- a. Gram stain
- b. An enzyme immunoassay
- c. Bacterial culture on selective media
- d. Nucleic acid amplification test
- e. Serology

Neisseria meningitidis

nucleic acid amplification test

18. A 20-year-old man with severe chronic lung disease presents with fever, cough productive of purulent sputum, and worsening hypoxemia. A sputum sample is collected, and the specimen is sent promptly to the laboratory. Microscopic examination of a Gram stain reveals numerous polymorphonuclear leukocytes and predominately gram-negative diplococci. The organism grows well on chocolate agar. What is the most likely organism causing this man's illness?

- a. Neisseria gonorrhoeae
- b. Neisseria lactamica
- c. Moraxella catarrhalis
- d. Haemophilus ducreyi
- e. Neisseria meningitidis

Neisseria meningitidis

Neisseria meningitidis

Neisseria meningitidis

collitis of the

19. A 25-year-old woman presents with septic arthritis of the knee. The fluid aspirate grows a gram-negative diplococcus on chocolate agar after 48 hours of incubation. The isolate is oxidase positive and oxidizes glucose but not maltose. You suspect infection with:

- a. Neisseria meningitidis

Neisseria meningitidis

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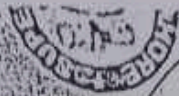
- b. *Neisseria lactamica*
c. *Moraxella catarrhalis*
d. *Neisseria gonorrhoeae* ✓
e. None of the above
20. All of the following are virulence factors associated with *N. gonorrhoeae* except:
a. Pili ✓
b. Por proteins ✓
c. Lipooligosaccharide ✓
d. Opa proteins ✓
e. Thick polysaccharide capsule ✓
21. A neonate after 24 hours of delivery presented in emergency department with high grade fever and poor feeding. On examination he was semi-conscious with neck stiffness. Lumbar puncture was done and microscopy of the CSF showed gram negative rods. What is your diagnosis?
a. Group B streptococci
b. *E. coli* ✓ ← *E. coli*
c. *Klebsiella*
d. *Pseudomonas*
e. *Proteus*
✓ *Strep. pneumoniae*
✓ *Vibrio*
22. A 20 year old male has wisdom tooth extraction diagnosed with bacterial endocarditis. He has congenital heart disease. Which is the most likely organism?
a. *Staphylococcus aureus*
b. *Staphylococcus epidermidis*
c. *Streptococcus pneumoniae*
d. *Streptococcus viridans* ✓ *viridans*
e. *Enterococcus faecalis*
23. A 65 year old male presents with cold like symptoms for last 3 days. He also has chills, chest pain, and productive cough with bloody sputum. Blood agar reveals alpha hemolytic colonies. If quelling test is done. Which of the following is the most likely cause?
a. *Corynebacterium*
b. *Enterobacter* spp.
c. *Hemophilus*
d. *Neisseria*
e. *Streptococcus pneumoniae* ✓
24. A 25 year old woman was well until the sudden onset of fever with several skin lesion (purpura). The lesions are scattered over body and are not raised. Her blood pressure is 60/10. Blood culture grew gram negative diplococci. Which is the most likely agent?
a. *Neisseria meningitidis* ✓ *meningitidis*
b. *E. coli*
c. *Streptococcus pneumoniae*
d. *Listeria*
e. *H. influenzae*
25. An 18-year-old woman who reports unprotected sex with a new partner 2 weeks previously develops fever and left lower quadrant abdominal pain with onset in association with her menstrual period. On pelvic examination in the emergency department, she has bilateral

tenderness when the uterus is palpated. A mass 4-3 cm in diameter is felt on the left, suggestive of tubo-ovarian abscess. Subsequently, *Neisseria gonorrhoeae* is cultured from her endocervix. The diagnosis is gonococcal pelvic inflammatory disease. A common sequela or complication of this infection is:

- Cancer of the cervix
 - Urethral stricture
 - Uterine fibroid tumors
 - Infertility**
 - Vaginal-rectal fistula
26. A food commonly associated with *Bacillus cereus* food poisoning is:
- Fried reheated rice
 - Baked potato
 - Hot freshly steamed rice** *Hot freshly steamed*
 - Green beans
 - Honey
27. Tetanus toxin (tetanospasmin) diffuses to terminals of inhibitory cells in the spinal cord and brainstem and blocks which of the following?
- Release of acetylcholine
 - Cleavage of SNARE proteins
 - Release of inhibitory glycine and γ -aminobutyric acid**
 - Release of Protective Antigen
 - Activation of acetylcholine esterase
28. *Listeria monocytogenes* is frequently a foodborne pathogen because:
- It can survive at 4°C.
 - It survives under conditions of low pH.
 - It survives in the presence of high salt concentrations.
 - All of the above are correct.** *All of the above*
 - None of the above is correct
29. Which one of the following sets of bacteria causes diseases characterized by a pseudomembrane?
- Bacillus anthracis* and *Listeria*
 - Bacillus cereus* and *Clostridium perferingens*
 - Bacillus cereus* and *Clostridium tetani*
 - Corynebacterium diphtheria* and *Clostridium difficile***
 - Corynebacterium diphtheria* and *Listeria*
30. A housewife who lives on a small farm is brought to the emergency department complaining of double vision and difficulty talking. Within the past 2 hours, she noted a dry mouth and generalized weakness. Last night she served home-canned green beans as part of the meal. She tasted the beans before they were boiled. None of the other family members are ill. On examination, there is symmetrical descending paralysis of the cranial nerves, upper extremities, and trunk. The correct diagnosis is which one of the following?
- Tetanus
 - Strychnine poisoning

- c. Botulism
- d. Morphine overdose
- e. Ricin intoxication

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2019

Grand Test, 07 May 2019
MBBS 3rd Year (MCQ)
(Special Bacteriology-II)

Marked

Time Allowed: 25 min

Total Marks: 25

Instructions:

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- a. Clue cells (Clue cells = clue cells)
- b. Gram negative diplococci in PMNS
- c. Koilocytic cells
- d. Owl-eye inclusions
- e. Tzanck smear

2. A food commonly associated with *Bacillus cereus* food poisoning is?

- a. Baked potatoes
- b. Reheated fried rice (Reheated Rice)
- c. Honey
- d. Green beans
- e. Hot rice

3. Tetanus toxin (tetanospasmin) is responsible for blockage of which of the following inhibitory neurotransmitter?

- a. Acetylcholine
- b. Protective antigen
- c. Glycine and GABA (GABA and Glycine)
- d. Proteins
- e. Activation of acetylcholine esterase

4. A shepherd presented to the dermatology department with painless ulcer with black eschar on his hand. He had history of trauma a few days back. Which of the following Gram positive rod, also used for bioterrorism is the most likely causative agent?

- a. Bacillus anthracis (Bacillus Anthracis)
- b. Clostridium tetani
- c. Bacillus cereus
- d. Clostridium perferingens
- e. Corynebacterium diphtheriae

Listeria monocytogenes

6. A premature baby boy developed meningitis one week after birth. Mother had history of ingestion of sterilized milk and cheese. Gram staining of CSF revealed L-shaped Gram positive rods having tumbling motility. What is the most likely causative agent?

- a. *Neisseria meningitidis*
- b. *Streptococcus pneumoniae*
- c. *Listeria monocytogenes*
- d. *Streptococcus agalactiae*
- e. *E. coli*

Listeria monocytogenes
(Listeria monocytogenes)

hepato, lobulated Actinomyces

7. A middle aged man developed hard, non-tender swelling at the angle of mandible, having draining pus through sinus tracts. Pus from draining sinus revealed Gram-positive branching rods with presence of hard, lobulated, sulfur granules. What is the most likely causative agent?

- a. *Nocardia*
- b. *Actinomyces israelii*
- c. *Bacillus anthracis*
- d. *Clostridium difficile*
- e. *Staphylococcus aureus*

Actinomyces israelii
Actinomyces israelii

Actinomyces israelii

8. A patient presented with pseudomembranes in the throat leading to respiratory distress. The organism obtained was a Gram positive rod with metachromatic granules. Name the causative agent:

- a. *Nocardia*
- b. *Actinomyces israelii*
- c. *Bacillus anthracis*
- d. *Corynebacterium diphtheriae*
- e. *Listeria monocytogenes*

Corynebacterium diphtheriae
Corynebacterium diphtheriae

9. An immune-compromised chronic diabetic patient had to go for amputation of his foot after he developed gas gangrene. The organism isolated from the pus was a gram positive rod, showing double zone of hemolysis on blood agar and positive Nagler's reaction. Pick the causative agent:

- a. *Clostridium difficile*
- b. *Corynebacterium diphtheriae*
- c. *Clostridium perfringens*
- d. *Clostridium botulinum*
- e. *Bacillus anthracis*

Clostridium perfringens
Clostridium perfringens

botulinum

10. A 40 years old woman has blurred vision and slurred speech. She is afebrile. She is well known in her neighborhood for her expertise in home-canned vegetables and fruits. The most likely cause of her illness is:

- a. *Clostridium botulinum* toxin acting on neuromuscular junctions
- b. *Clostridium botulinum* toxin acting on cranial nerves
- c. *Clostridium botulinum* toxin acting on adrenergic receptors
- d. *Clostridium difficile* toxin acting on acetylcholine receptors
- e. *Clostridium perfringens* toxin acting on neuromuscular junction

Clostridium botulinum toxin acting on neuromuscular junctions

10. A 40-year-old man has a swollen, red, hot, tender ankle, accompanied by a temperature of 100°F for the past 2 days. There is no history of trauma. Gram-negative diplococci in joint fluid aspirate seen. Organism is oxidase-positive. Which of the following is the causative agent?

- a. Staphylococcus aureus
- b. Enterococcus
- c. Streptococcus pyogenes
- d. Neisseria gonorrhoeae**
- e. Streptococcus epidermidis

Neisseria gonorrhoeae
Neisseria meningitidis

11. A 25 year old woman was well until the sudden onset of fever and neck stiffness with several skin lesion (purpura). The lesions are scattered over body and are not raised. Her blood pressure is 60/10. Blood culture grew gram negative diplococci. Which is the most likely agent?

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- b. E. coli
- c. Streptococcus pneumoniae
- d. Listeria
- e. H. influenzae

Neisseria meningitidis
Neisseria meningitidis

12. A 3-year-old boy had complaint of headache with a two days history of fever of 39.7°C and extremely lethargic. A lumbar puncture revealed 2000 neutrophils/mm³ and CSF glucose level of 9 mg/dL (normal 15 to 45 mg/dL). The Gram stain showed gram-negative coccobacilli. The most probable infecting organism is?

- a. Streptococci Gp B
- b. Neisseria meningitidis
- c. S pneumoniae
- d. Escherichia coli
- e. Haemophilus influenzae**

Haemophilus influenzae
Haemophilus influenzae

13. A 27 year old female admitted to the Hospital because of fever with increasing anorexia, headache, abdominal pain, weakness and altered mental state of 2 days duration. Ten days prior to admission she had diarrhea that lasted for 36 hours. Her temperature is 39°C, heart rate is 90/min, and blood pressure is 120/80. Rose spots seen on her trunk. Blood culture done and IV line placed. The most likely cause of her illness is?

- a. Enterotoxigenic Escherichia coli
- b. Shigella sonnei
- c. Salmonella typhimurium
- d. Salmonella typhi**
- e. Enteroinvasive Escherichia coli

Salmonella typhi
Salmonella typhi

14. In a community an epidemic of diarrhea occurred. Every patient complained of passing watery stool without fever or abdominal pain. They had remarkable dehydration. On Hospital admission a normal saline drip helps a lot. The most likely etiological organism for this epidemic is:

- a. Vibrio cholerae**
- b. Pseudomonas spp.
- c. E. coli
- d. Proteus
- e. Klebsiella spp.

Vibrio cholerae
Vibrio cholerae

ANS: Gastric leucoid
Rapidly infectious which pyloric ulcer

gastric adenoma with H. pylori can lead to C Gastric carcinoma

- b. Gastric carcinoma
- c. Duodenal carcinoma
- d. Gastric sarcoma
- e. Gastric and duodenal carcinoma

which due following bacteria
Shigella dysenteriae Shigella flexneri

21. Which of the following bacterial agents has the lowest infective dose for producing gastrointestinal disease in the human host?
- a. Enteropathogenic Escherichia coli
 - b. Enterotoxigenic Escherichia coli
 - c. Salmonella (nontyphoid serotypes)
 - d. Shigella dysenteriae
 - e. Vibrio cholerae

Shigella dysenteriae
Shigella flexneri
Shigella dysenteriae
Shigella dysenteriae

22. Eight of 10 family members presented with diarrhea with abdominal cramps, general malaise, and fever ranging from 37.5 degree C to 38.7 degree C. Stools from 3 are blood tinged. Lab studies revealed the causative agent as a microaerophilic gram negative curved rod with polar flagella often in pairs to give a seagull appearance. It grew on special media at 42 degree C the original contamination was probably

- a. Poultry
- b. Improperly canned food
- c. Fried rice
- d. Fish
- e. Vegetables

Poultry
Poultry
Poultry

23. A person ate hamburger at diner. Next day he had bloody diarrhea along with anuria and bleeding from gums. Gram stain of the stool showed gram negative rods. What would be the reaction of the organism on TSI agar?

- a. Acid slant, acid butt, GAS(+), H2S(-)
- b. Alkaline slant, acid butt, GAS(-), H2S(-)
- c. Alkaline slant, alkaline butt, GAS(-), H2S(-)
- d. Alkaline slant, acid butt, GAS(+), H2S(+)
- e. Acidic slant, alkaline butt, GAS(+), H2S(+)

Acid slant, acid butt, H₂S(-)
Acid slant, acid butt, H₂S(-)

24. Which of the following is not a common characteristic of family enterobacteriaceae?

- a. All the members are Gram +ve rods
- b. All are Non-spore forming
- c. All are Nitrate reducers
- d. All are Oxidase +ve
- e. All are lactose fermenters

All are lactose fermenters
All are lactose fermenters

25. A young male was received in emergency with signs and symptoms of sexually transmitted disease. Neisseria gonorrhoea was among the top differentials. Which medium is used for the growth of Neisseria gonorrhoea?

- a. Nutrient agar
- b. Alkaline peptone water
- c. Blood agar
- d. Inoculum medium
- e. Islatravir infusion

Medium used for the growth of Neisseria gonorrhoea
Medium used for the growth of Neisseria gonorrhoea

Specificity of an antibody is due to:

- a. its valency
- b. The heavy chains
- c. The Fc portion of the molecule
- d. The variable portion of the heavy and light chain**
- e. The variable portion of heavy chain

15. Grafts between genetically identical twins:

- a. Are rejected slowly as a result of minor histocompatibility antigens
- b. Are subject to hyper-acute rejection
- c. Are not rejected even without immunosuppression**
- d. Are subject to acute rejection
- e. None of the above

16. A student developed food poisoning after having dinner at a new restaurant. He had fever, nausea and vomiting. Which of the following virulence factor of *Staph aureus* was responsible for his disease:

- a. Exfoliative toxin
- b. Lipid A
- c. Toxic shock syndrome toxin
- d. Enterotoxin**
- e. Alpha-toxin

Enterotoxin (Enterotoxin)

17. Gram staining of a positive blood culture revealed Gram positive cocci. *Staphylococcus aureus* was suspected to be the causative agent. Which of the following test is required to differentiate *Staphylococcus aureus* from *Staphylococcus epidermidis*?

- a. Oxidase
- b. Catalase
- c. Coagulase**
- d. Protease
- e. Indole

(Coagulase) Coagulase

18. Seven days ago, a 27 year old medical student returned from Central America, where she had spent the summer working in a clinic. Four days ago, she developed an erythematous sunburn-like rash. She also has had headache, muscle aches, and abdominal cramps with diarrhea. Her blood pressure is 70/40 mm Hg. Pelvic examination shows she is having her menstrual period with a tampon in place; otherwise, the pelvic examination is normal. Her kidney function tests (serum urea nitrogen and creatinine) are abnormal, indicating mild renal failure. Her illness is likely to be caused by which of the following?

- a. S. aureus**
- b. S. epidermidis
- c. Str. Saprophyticus
- d. Str. Agalactiae
- e. Enterococci

Staph aureus

19. A young female presented with signs and symptoms of urinary tract infection. Urine culture revealed Gram positive cocci, showing catalase and coagulase test negative. Which test distinguishes *S. epidermidis* from *Staph saprophyticus*?

- a. Catalase test
- b. Optochin sensitivity test
- c. Coagulase test
- d. DNase test.
- e. Novobiocin sensitivity test**

How in How blair is ruled

NOVO!

20. Which of the following is Alpha hemolytic bacteria, catalase negative, found in chains and is optochin resistant?

- a. Staphylococcus aureus
- b. Streptococcus pyogenes
- c. Streptococcus agalactiae
- d. Streptococcus viridans
- e. Streptococcus pneumoniae

21. A 27 year old female in her 36 weeks of gestation during routine screening tests was found to have a positive culture of a gram positive, beta hemolytic bacteria colonizing her vagina. It was bacitracin resistant Hippurate test positive. Prophylactic penicillin treatment was given. Which bacteria was isolated on culture?

- a. S. aureus
- b. viridans group
- c. S. pneumoniae
- d. S. agalactiae
- e. S. pyogenes

22. A patient developed scarlet fever, characterized by skin rash with sandpaper like texture, strawberry tongue, pallor, and subsequent desquamation. The organism obtained on blood culture was beta hemolytic Lancefield group A. What is the causative agent?

- a. S. aureus
- b. S. pyogenes
- c. S. epidermidis
- d. S. pneumoniae
- e. viridans group

23. Which of the following test is used to distinguish Streptococcus pyogenes from Streptococcus agalactiae?

- a. Lancefield grouping
- b. Esculin hydrolysis
- c. Growth in 6.5% NaCl
- d. Growth in presence of bile
- e. CAMP test

24. A 2-month-old baby develops high grade fever, vomiting, sleep disturbance and seizures. Lumbar puncture reveals high neutrophil count. On Gram staining long chains of Gram positive cocci seen. Which of the following is most likely causative pathogen of this condition?

- a. Escherichia coli
- b. Streptococcus agalactiae
- c. Neisseria meningitidis
- d. Staphylococcus aureus
- e. Haemophilus influenza

25. A patient suffered from acute glomerulonephritis 3 weeks after skin infection by group-A beta hemolytic Streptococci. Which of the following bacteria shows beta hemolysis on blood agar plate?

- a. Streptococcus pyogenes
- b. Streptococcus viridans
- c. Streptococcus agalactiae
- d. Streptococcus pneumoniae
- e. Enterococci



Department of Pathology
Azra Naheed Medical College
Grand Test-3, 4th Feb 2020
MBBS 3rd Year (MCQ)
(Special Bacteriology-I)

Time Allowed: 20 min

Total Marks: 20

Name: _____

Roll No: _____

Date: _____

Instructions:

1. All objective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
2. Any cuttings or overwriting in answering the objective part will not be accepted and no marks will be given even if the answer is correct.

1. A 28 year old woman presents to her gynecologist with complaints of malodorous vaginal discharge. Upon examination the physician notices a thin gray vaginal discharge with no vaginal redness. A whiff test was positive for fishy odor. Which of the following is an important cause of bacterial vaginosis?
- a. **Gardnerella vaginalis**
 - b. Trichomonas vaginalis
 - c. Candida albicans
 - d. Staphylococcus saprophyticus
 - e. Neisseria gonorrhoeae
2. Which of the following bacteria are not associated with food poisoning?
- a. Staphylococcus aureus
 - b. **Staphylococcus epidermidis**
 - c. Clostridium botulinum
 - d. Bacillus cereus
 - e. Clostridium perfringens
3. A patient after a road traffic accident presented with spastic paralysis. Considering this in view, the release of GABA and glycine are inhibited by which bacteria?
- a. **Clostridium tetani**
 - b. Clostridium perfringens
 - c. Corynebacterium diphtheria
 - d. Clostridium botulinum
 - e. Clostridium difficile
4. A shepherd presented to the dermatology department with painless ulcer with black eschar on his hand. He had history of trauma a few days back. Which of the following Gram positive rod, also used for bio-terrorism is the most likely causative agent?
- a. **Bacillus anthracis**
 - b. Clostridium tetani
 - c. Bacillus cereus
 - d. Clostridium perfringens
 - e. Corynebacterium diphtheria
5. A neonate developed meningitis one week after birth. Mother had history of ingestion of unpasteurized cheese. Gram staining of CSF revealed Gram positive rods having tumbling motility. He was suspected to have neonatal meningitis. Which one of the following organism is not a cause of neonatal meningitis?
- a. Neisseria meningitidis
 - b. **Listeria monocytogenes**
 - c. Streptococcus agalactiae

- d. E.coli
- e. None of the above

A middle aged man developed hard, non-tender swelling at the angle of mandible, having draining pus through sinus tracts. Pus from draining sinus revealed Gram-positive branching rods with presence of hard, lobulated, sulfur granules. What is the most likely causative agent?

- a. Nocardia
- b. Actinomyces israelii
- c. Bacillus anthracis
- d. Clostridium difficile
- e. Staphylococcus aureus

A patient presented with pseudo-membranes in the throat leading to respiratory distress. On Gram staining the organism had Chinese letter appearance. What is the most probable causative agent?

- a. Nocardia
- b. Clostridium difficile
- c. Bacillus anthracis
- d. Corynebacterium diphtheriae
- e. Listeria monocytogenes

8. A chronic diabetic patient had to go for amputation of his foot after he developed gas gangrene. The organism isolated from the pus was a gram positive rod, showing double zone of hemolysis on blood agar. Name the causative agent:

- a. Clostridium difficile
- b. Corynebacterium diphtheriae
- c. Clostridium perfringens
- d. Clostridium botulinum
- e. Bacillus anthracis

9. A 40 years old woman developed flaccid paralysis. She was very fond of canned vegetables and fruits. The most likely cause of her illness is:

- a. Clostridium botulinum toxin blocking the release of acetylcholine
- b. Endotoxin
- c. Clostridium tetani toxin acting on adrenergic receptors
- d. Clostridium difficile toxin acting on acetylcholine receptors
- e. Clostridium perfringens toxin acting on neuromuscular junction

10. A 20-year-old man has a swollen, red, hot, tender ankle, accompanied by a temperature of 100°F for the past 2 days. There is no history of trauma. Gram-negative diplococci in joint fluid aspirate seen. Which of the following is the causative agent?

- a. Staphylococcus aureus
- b. Enterococcus
- c. Streptococcus pyogenes
- d. Neisseria gonorrhoeae
- e. Streptococcus epidermidis

11. A 25 year old woman was well until the sudden onset of fever and neck stiffness with several skin lesion (purpura). The lesions are scattered over body and are not raised. Her blood pressure is 80/50. Blood culture grew gram negative diplococci. Which is the most likely agent?

- a. Neisseria meningitidis
- b. E.coli
- c. Streptococcus pneumoniae
- d. Listeria

e. *H. influenzae*

A young male was received in emergency with signs and symptoms of sexually transmitted disease. *Neisseria gonorrhoea* was among the top differentials. Which of the following is the selective media for *Neisseria gonorrhoeae*?

- a. Nutrient agar
- b. Alkaline peptone water
- c. Blood agar
- d. Thayer Martin Medium
- e. Brain heart infusion

13. A student developed food poisoning after having dinner at a new restaurant. He had fever, nausea and vomiting. A toxin of *Staphylococcus aureus* was suspected to be the causative agent. Which of the following is not a toxin of this organism?

- a. Exfoliative toxin
- b. Lipid A
- c. Toxic shock syndrome toxin
- d. Enterotoxin
- e. Alpha-toxin

14. Gram staining of a positive blood culture revealed Gram positive cocci. *Staphylococcus aureus* was suspected to be the causative agent. Which of the following is not an enzyme produced by this organism?

- a. Oxidase
- b. Catalase
- c. Coagulase
- d. DNase
- e. hyaluronidase

15. A young boy having a history of nasal surgery, developed intense erythema with subsequent desquamation, especially of the palms and soles and a state of confusion. He also has had headache, muscle aches, and abdominal cramps with diarrhea. His systolic blood pressure was less than 90 mm Hg. Nasal examination showed having a nasal pack in his nose. His kidney function tests (serum creatinine > 2 times normal) were abnormal, indicating mild renal failure. His illness is likely to be caused by which of the following organism?

- a. *S. aureus*
- b. *S. epidermidis*
- c. *Str. Saprophyticus*
- d. *Str. Agalactiae*
- e. Enterococci

16. A young female presented with signs and symptoms of urinary tract infection. Urine culture revealed Gram positive cocci. Which test distinguishes *S. epidermidis* from *Staph saprophyticus*?

- a. Catalase test
- b. Optochin sensitivity test
- c. Coagulase test
- d. DNase test
- e. Novobiocin sensitivity test

17. A young female after trauma during a dental procedure, developed infective endocarditis. Which of the following is an Alpha hemolytic, optochin resistant bacterium is responsible for her disease?

- a. *Staphylococcus aureus*
- b. *Streptococcus pyogenes*
- c. *Streptococcus agalactiae*
- d. *Streptococcus viridans*
- e. *Streptococcus pneumoniae*

18. A 27 year old female developed postpartum endometritis few days after giving birth to a baby boy. She was found to have a positive culture of a gram positive, beta hemolytic bacteria that were Bacitracin resistant. Name the causative agent.

- a. *S. aureus*
- b. viridans group
- c. *S. pneumoniae*
- d. *S. agalactiae*
- e. *S. pyogenes*

19. A young patient developed necrotizing fasciitis, with no history of any chronic illness. The organism obtained on blood culture was Beta hemolytic, Lancefield group A. What is the causative agent?

- a. *S. aureus*
- b. *S. pyogenes*
- c. *S. epidermidis*
- d. *S. pneumoniae*
- e. viridans group

20. A 48-year-old alcoholic man was admitted to a hospital because of stupor. He lives with homeless. His temperature was 38.5°C and his blood pressure 125/80 mm Hg. He moans when attempts were made to arouse him. He has positive Kernig and Brudzinski signs, suggesting meningeal irritation. Chest radiography shows left lower lobe lung consolidation. An endotracheal aspirate yields rust-colored sputum. Examination of Gram-stained sputum smear shows numerous polymorphonuclear cells and gram-positive lancet-shaped diplococci. Based on this information, the likely diagnosis is

- a. Pneumonia and meningitis caused by *Staphylococcus aureus*
- b. Pneumonia and meningitis caused by *Streptococcus pyogenes*
- c. Pneumonia and meningitis caused by *Streptococcus pneumoniae*
- d. Pneumonia and meningitis caused by *Enterococcus faecalis*
- e. Pneumonia and meningitis caused by *Neisseria meningitidis*

	Normal	Bacterial vaginosis	Trichomonas vaginitis	Candida albicans vaginitis
Primary symptoms	None	Discharge itching	Discharge itching	Discharge itching
vaginal discharge	Slight	Increased white grey	Thin yellow green	Thick white clumpy
pH	< 4.5	> 4.5	> 4.5	< 4.5
odor	odorless	Common	May be present fishy	None
Treatment		Metronidazole	metronidazole	anti-fungal

F17-129

M. Rizwan

Time Allowed: 30 min

Special Bacteriology 2020

Total Marks: 10

Name: [Signature]

Roll No: [Signature]

Date:

Instructions:

- All objective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
- Any entries in a notebook or answering the objective part will not be accepted and marks will be given even if the answer is correct.

- A patient with a peptic ulcer was admitted to the hospital and a gastric biopsy was performed. The tissue was cultured on chocolate agar incubated in a microaerophilic environment at 37°C for 5 to 7 days. At 5 days of incubation curved, Gram negative oxidase-positive rods appeared. The most likely identity of this organism is:
 - Campylobacter jejuni
 - Vibrio parahaemolyticus
 - Haemophilus influenzae
 - Helicobacter pylori
 - Vibrio cholera
- Leprosy (Hansen's disease) caused by *Mycobacterium leprae* is a worldwide disease, predominately common in Asia and Africa. The clinical spectrum of Hansen's disease is best characterized by:
 - Immunologic anergy
 - Chronic pneumonitis
 - Peripheral neuritis
 - Raciform lesions that digest tissues
 - Erythematous lesions resembling concentric circles
- At a church dinner, the following meal was served: baked beans, ham, coleslaw, eclairs, and coffee. Of the 10 people who attended, 4 became ill because of food poisoning in 3 days; 1 eventually died. Two weeks after attending the church dinner, a 19-year-old girl gave birth to a baby who rapidly became ill with meningitis and died in 5 days. Microbiological analysis revealed no growth in the baked beans, ham, or coffee; many Gram-positive, short, rod-shaped bacteria in the eclairs. The most likely cause of this outbreak is:
 - Staphylococcus aureus*
 - Listeria*
 - Clostridium perfringens*
 - Clostridium botulinum*
 - Neisseria meningitidis*
- A 21-year-old college student complained of malaise, low-grade fever, and a harsh cough, but not of muscle aches and pains. An x-ray revealed a diffuse interstitial pneumonia in the left lobes of the lung. The WBC count was normal. The student was hospitalized for 2 weeks. A DNA probe to the 16S ribosomal RNA of an organism revealed lack of cell wall. Based on the information given, the most likely diagnosis is:
 - Mycoplasma pneumoniae*
 - Pneumocystis carinii*
 - Staphylococcus pneumoniae*
 - Influenza
 - Legionellosis
- Pathogenic mechanism involved in tuberculosis can be primarily attributed to which of the following?
 - Toxin production by the mycobacteria
 - Specific cell adhesion sites
 - Cell-mediated hypersensitivity
 - Humoral immunity
 - Clogging of alveoli by large numbers of acid-fast mycobacteria

SS11-11130

6. A 30-year-old male patient was seen by the emergency service and reported a 2-week history of a lesion on his penis. He noted that this ulcer did not hurt. He was suspected to have developed a chancre. Which one of the following actions is most valid?
- Draw blood for a herpes antibody test
 - Perform a dark-field examination of the lesion
 - Prescribe acyclovir for primary genital herpes
 - Even if treated, the lesion will remain for months
 - Failure to treat the patient will have no untoward effect, as this is a self-limiting infection
7. A patient was hospitalized after an automobile accident. The wounds became infected and the patient was treated with tobramycin, carbenicillin, and clindamycin. Five days after antibiotic therapy was initiated, the patient developed severe diarrhea and pseudomembranous enterocolitis. Antibiotic-associated diarrhea and the more serious pseudomembranous enterocolitis can be caused by
- Clostridium sordellii*
 - Clostridium perfringens*
 - Clostridium difficile*
 - Staph aureus*
 - Bacteroides fragilis*
8. A patient complained to his dentist about a draining lesion and sinuses in his mouth. A Gram's stain of the pus showed leukocytes and many branched filamentous Gram-positive rods. The most likely cause of the disease is:
- Actinomyces israelii*
 - Actinomyces viscosus*
 - Corynebacterium diptheriae*
 - Propionibacterium acnes*
 - Staph aureus*
9. Fever of unknown origin in a traveler who returns from a rural area is most likely to be caused by which of the following organisms?
- Bruceella melitensis*
 - Clostridium*
 - Trypanosoma pallidum*
 - Histoplasma capsulatum*
 - Mycobacterium tuberculosis*
10. Cholera is a diarrhoeal illness that is endemic in many parts of the world. In the treatment of patients with this disease, the most important antibiotic to be administered would be expected to:
- kill the bacterial flora in the gut
 - erase the toxin from the gut
 - increase fluid secretion
 - reduce intestinal motility
 - block the action of the toxin
11. A boy of 10 years came to the hospital with a fever and a red, swollen, and painful neck. He had eaten a sandwich for lunch the day before. The next day he was found to have a red, swollen, and painful neck. The most likely organism is:
- Staph aureus*
 - Cocci in chains*
 - Staph aureus*
 - Clostridium perfringens*
 - Bacillus cereus*
12. A 70-year-old female patient was admitted to a local hospital with fever and chills following cardiac surgery at a major teaching institution. Blood cultures were taken and a pair of positive results grew from the liquid cultures within 24 hours. It was found to be a single Gram-negative rod. The most likely identification is:
- Streptococcus pneumoniae*
 - Escherichia coli*
 - Group A streptococcus
 - Enterococcus*
 - Group B streptococcus

...old menstruating woman appeared in the emergency room with the following signs and symptoms:
fever (40°C); WBC, 16,000/μL; blood pressure, 90/65 mmHg; a rash on her trunk, palms, and soles;
nausea, fatigue; vomiting; and diarrhea. The patient described in the case above most likely has:

- a. Scalded skin syndrome by Staph aureus
- b. Toxic shock syndrome by Staph aureus
- c. Guillain-Barré syndrome
- d. Chickenpox
- e. Staphylococcal food poisoning

14. A 2-year-old infant is brought to the emergency room with hemolytic uremic syndrome and thrombocytopenia. Which one of the following bacteria would most likely be isolated from a stool specimen?

- a. Shigella
- b. Salmonella
- c. Aeromonas
- d. E. coli O157/H7
- e. Enterobacter

15. E. coli causes disease by a variety of different methods. Which one of the following E. coli types is characterized by the presence of LT (heat-labile) and ST (heat-stable) proteins?

- a. Enteroinvasive (EIEC)
- b. Enterotoxigenic (ETEC)
- c. Enterohemorrhagic (EHEC)
- d. Enteropathogenic (EPEC)
- e. Enterohemolytic (EHEC)

16. Recently, there have been sensational media reports of patients infected with invasive, "flesh-eating" bacteria that spread rapidly through the tissues. This organism is a beta-hemolytic Streptococcus. This necrotizing fasciitis is usually caused by:

- a. Staph aureus
- b. Streptococcus pyogenes
- c. Micrococcus
- d. Bacillus cereus
- e. Clostridium tetani

17. If a quelling test or capsular swelling test was done on the following bacterial isolates, which one would you expect to be positive?

- a. Streptococcus pneumoniae
- b. Enterobacter
- c. Haemophilus parainfluenzae
- d. Staph aureus
- e. Streptococcus pyogenes

18. Bacteria cause disease in a number of ways. One mechanism of pathogenesis is the secretion of potent protein toxins. All the following diseases are caused by microbial protein toxins. Which one of the following toxins has been used for treatment of writer's cramp?

- a. Tetanus toxin
- b. Botulism toxin
- c. Bacillary (Shigella) dysentery
- d. Diphtheria toxin
- e. Disseminated intravascular coagulation

19. The most common portal of entry for Clostridium tetani, the cause of tetanus, is the:

- a. Skin
- b. Gastrointestinal tract
- c. Respiratory tract
- d. Genital tract
- e. Nasal tract

20. A person who developed signs and symptoms of gonorrhoea is most likely to have acquired it via the:

- a. Skin
- b. Gastrointestinal tract
- c. Respiratory tract
- d. Genital tract
- e. Nasal tract

21. *Vibrio cholerae*, the causative agent of cholera, is best isolated using which culture media:

- a. Sheep blood agar
- b. Löffler's medium
- c. Thayer-Martin agar
- d. Thiosulfate citrate bile salts sucrose medium (TCBS)
- e. Löwenstein-Jensen medium (LJ)

22. Which one of the following is an important virulence factor of *Bacillus anthracis*?

- a. Protective antigen & edema factor
- b. Lipopolysaccharide
- c. Pill
- d. A toxin that inhibits peptide chain elongation factor EF-2
- e. Lecithinase

23. A young man sustains major soft tissue injury and open fractures of his right leg after a motorcycle accident. One day later, he has a temperature of 38°C, increased heart rate, sweating and restlessness. On examination, the leg is swollen and tense, with thin, dark serous fluid draining from the wounds. The skin of the leg is cool, pale, white, and shining. Crepitus can be felt in the leg. *Clostridium perfringens* was thought to be responsible for gas gangrene. Which of the following is likely to be responsible for his condition?

- a. Elongation factor
- b. Tetanospasm
- c. Lecithinase
- d. Streptolysin O
- e. Toxic shock syndrome toxin

24. An 8-year-old boy, who recently arrived in the United States, develops a severe sore throat. On examination, a grayish exudate (pseudomembrane) is seen over the tonsils and pharynx. The differential diagnosis of severe pharyngitis such as this includes group A streptococcal infection, Epstein-Barr virus (EBV) infection, *Neisseria gonorrhoeae* pharyngitis, and diphtheria. The cause of the boy's pharyngitis is most likely:

- a. A gram-negative bacillus
- b. A single-stranded positive-sense RNA virus
- c. A catalase-positive, gram-positive coccus that grows in clusters
- d. A club-shaped gram-positive bacillus having Chinese letter appearance
- e. A double-stranded RNA virus

25. A 16-year-old bone marrow transplant patient has a central venous line that has been in place for 2 weeks. He also has a urinary tract catheter, which has been in place for 2 weeks as well. He develops fever while his white blood cell count is very low and before the transplant has engrafted. Three blood cultures are done which all revealed gram-positive, catalase-positive and coagulase-negative bacteria. Which one of the following is the causative agent?

- a. *Staphylococcus epidermidis*
- b. *Staphylococcus aureus*
- c. *Staphylococcus saprophyticus*
- d. Enterococci
- e. *Streptococcus viridans*

5-year-old woman is admitted to the hospital because of fever, with increasing anorexia, headache, weakness, and altered mental status of 2 days' duration. She works for an airline as a cabin attendant. Ten days before admission, she had a diarrheal illness that lasted for about 36 hours. She has been constipated for the past 4 days. Her temperature is 39°C, heart rate is 68 beats/min, blood pressure is 120/80 mm Hg, and respirations are 18 breaths/min. She knows who she is and where she is but does not know the date. Rose spots are seen on her trunk. The rest of physical examination is normal. Blood cultures are done. The most likely cause of her illness is

- Enterotoxigenic Escherichia coli (ETEC)
- Shigella sonnei
- Salmonella Typhimurium
- Salmonella Typhi
- Enteroinvasive Escherichia coli (EIEC)

27. A 55-year-old homeless man with alcoholism presents with severe multilobar pneumonia. He requires intubation and mechanical ventilation. A Gram stain of his sputum reveals numerous neutrophils and gram-negative rods that appear to have a capsule. The organism is a lactose fermenter on MacConkey agar and is very mucoid and is non-motile. What is the most likely organism causing this man's illness?

- Hemophilus influenzae
- Enterobacter aerogenes
- Proteus mirabilis
- Klebsiella pneumoniae
- Mycoplasma pneumoniae

28. A 4-year-old boy from Kansas City who recently started attending daycare is brought to his pediatrician for a diarrheal illness characterized by fever to 38.2°C, severe lower abdominal pain, and initially watery diarrhea that became blood tinged after 24 hours of illness. The mother reports that two other children who attend the same daycare have recently had diarrheal disease, one of whom likewise had bloody stools. Which of the following is the most likely pathogen causing the illness in these children?

- An entero-toxigenic strain of Escherichia coli
- Salmonella Typhi
- Shigella
- Bacillus
- Klebsiella

29. A young woman presents with recurrent urinary tract infections caused by the same Proteus strain. What is the major concern?

- She does not take her medications
- She is pregnant because pregnant patients are more susceptible to UTIs
- She has a bladder or kidney stone
- Her partner is infected
- She has occult diabetes

30. A 17-year-old girl with cystic fibrosis has a slight increase in her frequent cough and production of mucoid sputum. A sputum specimen is obtained and plated on routine culture media. The predominant growth are Gram-negative bacilli that form very mucoid colonies after 48 hours of incubation. These bacilli are oxidase positive, grow at 42°C, and have a grape-like odor. These Gram-negative bacilli are which of the following?

- Klebsiella pneumoniae
- Pseudomonas aeruginosa
- Staphylococcus aureus
- Streptococcus pneumoniae
- Mycobacterium tuberculosis



(Q No: 01c)

(Special Bacteriology-1 & 2)

Time Allowed: 60 min

Instructions:

- All subjective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
- Neat hand writing and use of margins will increase the outlook and presentation of your paper.

Attempt all Questions. Each Question carries 5 marks

1. Soon after birth, an infant develops seizures, a marked irritability, poor feeding, and fever. The infant's birth records note a prolonged labor with premature rupture of membranes. Gram stain of lumbar puncture revealed Gram positive cocci in chains, that later turned out to be beta-hemolytic.

- Name the causative agent and the disease. (1) → *Streptococcus pyogenes* → Rheumatic fever
- Discuss the laboratory diagnosis. (2) Specimen: Rectal or vaginal swab Gram staining
- What are the diseases caused by *Streptococcus pyogenes* according to pathogenesis? (2) (c-) Diseases are Rheumatic fever, scarlet fever, necrotic fasciitis, and streptococcal pharyngitis.

2. A lady complains of pain during sexual intercourse and irregular inter-menstrual bleeding. She has also begun to experience lower abdominal pain. A pelvic exam reveals a yellow mucopurulent discharge; during the examination, the cervix begins to bleed. Gram stain of discharge reveals Gram negative intracellular diplococci. The teenager reports that she has been sexually active with several partners over the last year. One of her partners, a male, comes to the same clinic complaining of dysuria and profuse yellow urethral discharge.

- What is the most probable cause of her symptoms? Name the causative agent and the disease. (1) → *Neisseria gonorrhoeae* → Gonorrhoea
- Enlist the virulence factors of the causative agent (1) → Pili, Porins, IgA protease, etc.
- Enlist the diseases caused by this organism. (1.5) → Gonorrhoea, proctitis, etc.
- Name 2 oxidase positive bacteria. (1) → *Spirillum*, *Pseudomonas*, *Campylobacter*
- Name the culture media used for diagnosis. (0.5) → *Chocolate agar*, *Mayer's medium*, *Thayer-Martin medium*

A series of patients in a small town visit the hospital complaining of bloody diarrhea, fatigue, and confusion. Physical exams reveal neurological deficits, and laboratory tests show anemia, thrombocytopenia, and uremia. Peripheral blood smears show fragmented RBCs, showing hemolysis. After careful questioning, the doctors discover that each patient had the same fast-food burgers. It was found out to be a gram negative rod showing yellow (acidic) slant and yellow (acidic) butt on TSI.

- Name the causative agent. (0.5) → *E. coli* → Enterohemorrhagic *E. coli*
- What is the most probable complication? (0.5) → Hemolytic uremic syndrome
- Discuss the pathogenesis of the organism. (1.5) → Enterohemorrhagic *E. coli* → *Shiga toxin*
- Name the strains of this bacterium. (1.5) → ETEC, EPEC, EHEC, ETEC, EPEC
- Classify gram negative rods on the basis of Lactose fermentation. (1)

Lactose fermenters: *E. coli*, *Klebsiella pneumoniae*, *Enterobacter*
Non-lactose fermenters: *Shigella*, *Salmonella*, *Proteus*

Pathogenesis: ETEC colonize small intestine. Pili facilitate binding of organism to the intestinal mucosa. It is mediated by the enterotoxin. Heat stable toxin causes an increase in the cAMP concentration in the intestinal cells. Heat labile toxin causes an increase in the cAMP concentration in the intestinal cells. ETEC causes the hypersecretion of Cl ions and water by the intestinal cells. But becomes toxic if it produces Shiga toxin.

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does not forming as and amount of the H₂S. Organisms base -ve C proteins organisms ... maximal or more of a persistent high fever. ... the fever began slowly and ... enlarged spleen

Q No: 05 (C) Pathogenesis of *Shigella* & Cholera toxin
 A subunit block G protein on the "ON" position

Persistent stimulation of the adenylate cyclase
 ↓
 cAMP concentration ↑

Activates the cAMP dependent protein kinase
 ↓
 Phosphorylation of the ion channels in the cell membrane

↓
 Watery efflux in the lumen of the gut

↓
 Massive watery diarrhea without leucocytes, neutrophils and RBCs.

1. Test Gramma intestinal bacteria
 Q No: 04 (b) Pathophysiology:
 Survives within the acidity of the stomach
 ↓
 In the Intestinal wall (Peyer's patches)
 Macrophages (Mφ)
 ↓
 Bacteria within the macrophages and survives
 ↓
 Exits via the lymphatic inside the macrophage

vegetative cells
 pathogenesis
 (University logo)

is the same
 TSI
 thirsty, has
 rhea this
 r, and the

several
 O139
 Biology
 bacterial
 for several
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Alkaline Slant - Acid Butt
1.5

A woman who recently returned from a trip to South America complains of a persistent high fever, malaise, and constipation that had lasted for over a week. She recalls that the fever began slowly and climbed its way up to the current 41°C. A physical examination reveals that she has an enlarged spleen and a generally tender abdomen with red macules or rose spots.

- a. Name the causative agent and the disease. (0.5)
- b. Discuss the pathophysiology. (1.5)
- c. What is Triple sugar iron agar and what are the findings of this bacterium on TSI? (1.5)
- d. How will you proceed in the laboratory for its diagnosis? (1.5)

does not ferment as an amount of the H₂S. organism. base - ve. Proteolytic organism. Produces similar colonies as were. Coliforms.

Typhoid and the agent is the Salmonella
typhi

A man visiting India arrives in the emergency room with signs of severe dehydration: He is thirsty, has decreased skin turgor, tachycardia, and somnolence. He abruptly began to suffer from diarrhea this morning and complains about watery stools having rice water appearance. He has no fever, and the doctor treats with fluid and electrolytes.

- a. Name the disease and the causative agent. (0.5)
- b. Does this bacterium cause epidemic or endemic disease? (0.5)
- c. Discuss the pathogenesis of the disease. (1.5)
- d. What is the serological and biological classification of this bacterium? (1)
- e. Explain the laboratory diagnosis. (1.5)

Shigella
epidemic
serological
biology

A homeless man enters the hospital with wasting and fever. He has had a chronic cough for several months producing bloody sputum as well as night sweats. Chest X-ray reveals cavitation's with air-fluid levels in the apex of his left lung. Diagnosis is confirmed by an acid-fast stain of sputum.

- a. Name the disease and the causative bacterium. (0.5)
- b. What is the pathogenesis of the disease? (1.5)
- c. Discuss the laboratory diagnosis. (1.5)
- d. Draw and label the typical pathogenic lesion of this disease? (1)
- e. What are the modes of prevention? (0.5)

Mycobacterium tuberculosis
epidemic
serological
biology
acid fast
resistant
survives
macrophages
phagosomes
proteases
lysosomes

Biochem
Gram stain
TST
Tuberculin
Test

Gram stain
acid fast
survives
macrophages

First week - Body temperature
Second week - enlargement of spleen
Third week - necrosis of pharynx
Leads to perforation and if left untreated can be fatal

UNIVERSITY OF THE SAHARA
Lecture 6
CG AB
CL 4
Time Allowed: 60 min
Name: M. Rizwan
Roll No. _____
Date: _____

Case
By
Ay

by lab

Phen
med



Time Allowed: 50

Name: _____

Q1) - Pyogenic local = Abscess, cellulitis, osteomyelitis, pyogenic abscess
 Systemic = Sepsis, endocarditis, toxic shock syndrome, meningitis, food poisoning

Pituitary abscess
 Positive cocci
 Spheres
 Double
 Possible

Q4. A 25-year old female developed postpartum mastitis. She also had previous history of repeated abscesses in past. Gram staining revealed Gram positive cocci in bunches, giving Dnase test positive.

- a) Name the causative agent. *Staphylococcus aureus* 01
- b) Enlist virulence factors of this organism. *Coagulase, DNase, Proteinase, Hemolysin, Exfoliatin, Enterotoxins, Toxic shock syndrome toxin-1, Exfoliative toxins, Phage-conferred exfoliative toxins, Exfoliative toxin A, Exfoliative toxin B, Exfoliative toxin C, Exfoliative toxin D, Exfoliative toxin E, Exfoliative toxin F, Exfoliative toxin G, Exfoliative toxin H, Exfoliative toxin I, Exfoliative toxin J, Exfoliative toxin K, Exfoliative toxin L, Exfoliative toxin M, Exfoliative toxin N, Exfoliative toxin O, Exfoliative toxin P, Exfoliative toxin Q, Exfoliative toxin R, Exfoliative toxin S, Exfoliative toxin T, Exfoliative toxin U, Exfoliative toxin V, Exfoliative toxin W, Exfoliative toxin X, Exfoliative toxin Y, Exfoliative toxin Z, Exfoliative toxin AA, Exfoliative toxin AB, Exfoliative toxin AC, Exfoliative toxin AD, Exfoliative toxin AE, Exfoliative toxin AF, Exfoliative toxin AG, Exfoliative toxin AH, Exfoliative toxin AI, Exfoliative toxin AJ, Exfoliative toxin AK, Exfoliative toxin AL, Exfoliative toxin AM, Exfoliative toxin AN, Exfoliative toxin AO, Exfoliative toxin AP, Exfoliative toxin AQ, Exfoliative toxin AR, Exfoliative toxin AS, Exfoliative toxin AT, Exfoliative toxin AU, Exfoliative toxin AV, Exfoliative toxin AW, Exfoliative toxin AX, Exfoliative toxin AY, Exfoliative toxin AZ, Exfoliative toxin BA, Exfoliative toxin BB, Exfoliative toxin BC, Exfoliative toxin BD, Exfoliative toxin BE, Exfoliative toxin BF, Exfoliative toxin BG, Exfoliative toxin BH, Exfoliative toxin BI, Exfoliative toxin BJ, Exfoliative toxin BK, Exfoliative toxin BL, Exfoliative toxin BM, Exfoliative toxin BN, Exfoliative toxin BO, Exfoliative toxin BP, Exfoliative toxin BQ, Exfoliative toxin BR, Exfoliative toxin BS, Exfoliative toxin BT, Exfoliative toxin BU, Exfoliative toxin BV, Exfoliative toxin BW, Exfoliative toxin BX, Exfoliative toxin BY, Exfoliative toxin BZ, Exfoliative toxin CA, Exfoliative toxin CB, Exfoliative toxin CC, Exfoliative toxin CD, Exfoliative toxin CE, Exfoliative toxin CF, Exfoliative toxin CG, Exfoliative toxin CH, Exfoliative toxin CI, Exfoliative toxin CJ, Exfoliative toxin CK, Exfoliative toxin CL, Exfoliative toxin CM, Exfoliative toxin CN, Exfoliative toxin CO, Exfoliative toxin CP, Exfoliative toxin CQ, Exfoliative toxin CR, Exfoliative toxin CS, Exfoliative toxin CT, Exfoliative toxin CU, Exfoliative toxin CV, Exfoliative toxin CW, Exfoliative toxin CX, Exfoliative toxin CY, Exfoliative toxin CZ, Exfoliative toxin DA, Exfoliative toxin DB, Exfoliative toxin DC, Exfoliative toxin DD, Exfoliative toxin DE, Exfoliative toxin DF, Exfoliative toxin DG, Exfoliative toxin DH, Exfoliative toxin DI, Exfoliative toxin DJ, Exfoliative toxin DK, Exfoliative toxin DL, Exfoliative toxin DM, Exfoliative toxin DN, Exfoliative toxin DO, Exfoliative toxin DP, Exfoliative toxin DQ, Exfoliative toxin DR, Exfoliative toxin DS, Exfoliative toxin DT, Exfoliative toxin DU, Exfoliative toxin DV, Exfoliative toxin DW, Exfoliative toxin DX, Exfoliative toxin DY, Exfoliative toxin DZ, Exfoliative toxin EA, Exfoliative toxin EB, Exfoliative toxin EC, Exfoliative toxin ED, Exfoliative toxin EE, Exfoliative toxin EF, Exfoliative toxin EG, Exfoliative toxin EH, Exfoliative toxin EI, Exfoliative toxin EJ, Exfoliative toxin EK, Exfoliative toxin EL, Exfoliative toxin EM, Exfoliative toxin EN, Exfoliative toxin EO, Exfoliative toxin EP, Exfoliative toxin EQ, Exfoliative toxin ER, Exfoliative toxin ES, Exfoliative toxin ET, Exfoliative toxin EU, Exfoliative toxin EV, Exfoliative toxin EW, Exfoliative toxin EX, Exfoliative toxin EY, Exfoliative toxin EZ, Exfoliative toxin FA, Exfoliative toxin FB, Exfoliative toxin FC, Exfoliative toxin FD, Exfoliative toxin FE, Exfoliative toxin FF, Exfoliative toxin FG, Exfoliative toxin FH, Exfoliative toxin FI, Exfoliative toxin FJ, Exfoliative toxin FK, Exfoliative toxin FL, Exfoliative toxin FM, Exfoliative toxin FN, Exfoliative toxin FO, Exfoliative toxin FP, Exfoliative toxin FQ, Exfoliative toxin FR, Exfoliative toxin FS, Exfoliative toxin FT, Exfoliative toxin FU, Exfoliative toxin FV, Exfoliative toxin FW, Exfoliative toxin FX, Exfoliative toxin FY, Exfoliative toxin FZ, Exfoliative toxin GA, Exfoliative toxin GB, Exfoliative toxin GC, Exfoliative toxin GD, Exfoliative toxin GE, Exfoliative toxin GF, Exfoliative toxin GG, Exfoliative toxin GH, Exfoliative toxin GI, Exfoliative toxin GJ, Exfoliative toxin GK, Exfoliative toxin GL, Exfoliative toxin GM, Exfoliative toxin GN, Exfoliative toxin GO, Exfoliative toxin GP, Exfoliative toxin GQ, Exfoliative toxin GR, Exfoliative toxin GS, Exfoliative toxin GT, Exfoliative toxin GU, Exfoliative toxin GV, Exfoliative toxin GW, Exfoliative toxin GX, Exfoliative toxin GY, Exfoliative toxin GZ, Exfoliative toxin HA, Exfoliative toxin HB, Exfoliative toxin HC, Exfoliative toxin HD, Exfoliative toxin HE, Exfoliative toxin HF, Exfoliative toxin HG, Exfoliative toxin HH, Exfoliative toxin HI, 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Exfoliative toxin JC, Exfoliative toxin JD, Exfoliative toxin JE, Exfoliative toxin JF, Exfoliative toxin JG, Exfoliative toxin JH, Exfoliative toxin JI, Exfoliative toxin JJ, Exfoliative toxin JK, Exfoliative toxin JL, Exfoliative toxin JM, Exfoliative toxin JN, Exfoliative toxin JO, Exfoliative toxin JP, Exfoliative toxin JQ, Exfoliative toxin JR, Exfoliative toxin JS, Exfoliative toxin JT, Exfoliative toxin JU, Exfoliative toxin JV, Exfoliative toxin JW, Exfoliative toxin JX, Exfoliative toxin JY, Exfoliative toxin JZ, Exfoliative toxin KA, Exfoliative toxin KB, Exfoliative toxin KC, Exfoliative toxin KD, Exfoliative toxin KE, Exfoliative toxin KF, Exfoliative toxin KG, Exfoliative toxin KH, Exfoliative toxin KI, Exfoliative toxin KJ, Exfoliative toxin KL, Exfoliative toxin KM, Exfoliative toxin KN, Exfoliative toxin KO, Exfoliative toxin KP, Exfoliative toxin KQ, Exfoliative toxin KR, Exfoliative toxin KS, Exfoliative toxin KT, Exfoliative toxin KU, Exfoliative toxin KV, 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Exfoliative toxin RU, Exfoliative toxin RV, Exfoliative toxin RW, Exfoliative toxin RX, Exfoliative toxin RY, Exfoliative toxin RZ, Exfoliative toxin SA, Exfoliative toxin SB, Exfoliative toxin SC, Exfoliative toxin SD, Exfoliative toxin SE, Exfoliative toxin SF, Exfoliative toxin SG, Exfoliative toxin SH, Exfoliative toxin SI, Exfoliative toxin SJ, Exfoliative toxin SK, Exfoliative toxin SL, Exfoliative toxin SM, Exfoliative toxin SN, Exfoliative toxin SO, Exfoliative toxin SP, Exfoliative toxin SQ, Exfoliative toxin SR, Exfoliative toxin SS, Exfoliative toxin ST, Exfoliative toxin SU, Exfoliative toxin SV, Exfoliative toxin SW, Exfoliative toxin SX, Exfoliative toxin SY, Exfoliative toxin SZ, Exfoliative toxin TA, Exfoliative toxin TB, Exfoliative toxin TC, Exfoliative toxin TD, Exfoliative toxin TE, Exfoliative toxin TF, Exfoliative toxin TG, Exfoliative toxin TH, Exfoliative toxin TI, Exfoliative toxin TJ, Exfoliative toxin TK, Exfoliative toxin TL, Exfoliative toxin TM, Exfoliative toxin TN, Exfoliative toxin TO, Exfoliative toxin TP, Exfoliative toxin TQ, Exfoliative toxin TR, Exfoliative toxin TS, Exfoliative toxin TT, Exfoliative toxin TU, Exfoliative toxin TV, Exfoliative toxin TW, Exfoliative toxin TX, Exfoliative toxin TY, Exfoliative toxin TZ, Exfoliative toxin UA, Exfoliative toxin UB, Exfoliative toxin UC, Exfoliative toxin UD, Exfoliative toxin UE, Exfoliative toxin UF, Exfoliative toxin UG, Exfoliative toxin UH, Exfoliative toxin UI, Exfoliative toxin UJ, Exfoliative toxin UK, Exfoliative toxin UL, Exfoliative toxin UM, Exfoliative toxin UN, Exfoliative toxin UO, Exfoliative toxin UP, Exfoliative toxin UQ, Exfoliative toxin UR, Exfoliative toxin US, Exfoliative toxin UT, Exfoliative toxin UU, Exfoliative toxin UV, Exfoliative toxin UW, Exfoliative toxin UX, Exfoliative toxin UY, Exfoliative toxin UZ, Exfoliative toxin VA, Exfoliative toxin VB, Exfoliative toxin VC, Exfoliative toxin VD, Exfoliative toxin VE, Exfoliative toxin VF, Exfoliative toxin VG, Exfoliative toxin VH, Exfoliative toxin VI, Exfoliative toxin VJ, Exfoliative toxin VK, Exfoliative toxin VL, Exfoliative toxin VM, Exfoliative toxin VN, Exfoliative toxin VO, Exfoliative toxin VP, Exfoliative toxin VQ, Exfoliative toxin VR, Exfoliative toxin VS, Exfoliative toxin VT, Exfoliative toxin VU, Exfoliative toxin VV, Exfoliative toxin VW, Exfoliative toxin VX, Exfoliative toxin VY, Exfoliative toxin VZ, Exfoliative toxin WA, Exfoliative toxin WB, Exfoliative toxin WC, Exfoliative toxin WD, Exfoliative toxin WE, Exfoliative toxin WF, Exfoliative toxin WG, Exfoliative toxin WH, Exfoliative toxin WI, Exfoliative toxin WJ, Exfoliative toxin WK, Exfoliative toxin WL, Exfoliative toxin WM, Exfoliative toxin WN, Exfoliative toxin WO, Exfoliative toxin WP, Exfoliative toxin WQ, Exfoliative toxin WR, Exfoliative toxin WS, Exfoliative toxin WT, Exfoliative toxin WU, Exfoliative toxin WV, Exfoliative toxin WW, Exfoliative toxin WX, Exfoliative toxin WY, Exfoliative toxin WZ, Exfoliative toxin XA, Exfoliative toxin XB, Exfoliative toxin XC, Exfoliative toxin XD, Exfoliative toxin XE, Exfoliative toxin XF, Exfoliative toxin XG, Exfoliative toxin XH, Exfoliative toxin XI, Exfoliative toxin XJ, Exfoliative toxin XK, Exfoliative toxin XL, Exfoliative toxin XM, Exfoliative toxin XN, Exfoliative toxin XO, Exfoliative toxin XP, Exfoliative toxin XQ, Exfoliative toxin XR, Exfoliative toxin XS, Exfoliative toxin XT, Exfoliative toxin XU, Exfoliative toxin XV, Exfoliative toxin XW, Exfoliative toxin XX, Exfoliative toxin XY, Exfoliative toxin XZ, Exfoliative toxin YA, Exfoliative toxin YB, Exfoliative toxin YC, Exfoliative toxin YD, Exfoliative toxin YE, Exfoliative toxin YF, Exfoliative toxin YG, Exfoliative toxin YH, Exfoliative toxin YI, Exfoliative toxin YJ, Exfoliative toxin YK, Exfoliative toxin YL, Exfoliative toxin YM, Exfoliative toxin YN, Exfoliative toxin YO, Exfoliative toxin YP, Exfoliative toxin YQ, Exfoliative toxin YR, Exfoliative toxin YS, Exfoliative toxin YT, Exfoliative toxin YU, Exfoliative toxin YV, Exfoliative toxin YW, Exfoliative toxin YX, Exfoliative toxin YY, Exfoliative toxin YZ, Exfoliative toxin ZA, Exfoliative toxin ZB, Exfoliative toxin ZC, Exfoliative toxin ZD, Exfoliative toxin ZE, Exfoliative toxin ZF, Exfoliative toxin ZG, Exfoliative toxin ZH, Exfoliative toxin ZI, Exfoliative toxin ZJ, Exfoliative toxin ZK, Exfoliative toxin ZL, Exfoliative toxin ZM, Exfoliative toxin ZN, Exfoliative toxin ZO, Exfoliative toxin ZP, Exfoliative toxin ZQ, Exfoliative toxin ZR, Exfoliative toxin ZS, Exfoliative toxin ZT, Exfoliative toxin ZU, Exfoliative toxin ZV, Exfoliative toxin ZW, Exfoliative toxin ZX, Exfoliative toxin ZY, Exfoliative toxin ZZ*

Q5. A 12 year young female child presented with regurgitation of fluids through nose most probably due to paralysis of muscles of soft palate & pharynx. On examination thick, gray, adherent pseudo-membrane was observed over the tonsils & throat. Her childhood immunization status was also not known.

- a) Name the causative agent. *Corynebacterium diphtheriae* 0.5
- b) What are the two forms of disease caused by this organism? *Local and systemic* 0.5
- c) Discuss the pathogenesis of the disease. *ADP ribosylation of EF-2* 1.5
- d) Name the organism causing diarrhea associated with reheated fried rice. *Bacillus cereus* 0.5
- e) Tabulate the differences between bacterial vaginosis, fungal and parasitic vaginitis. 1.5

Q6. An 8 year old boy developed influenza like signs & symptoms with production of rusty sputum. He was suspected to have pneumonia. Sputum sample was cultured, revealing alpha hemolytic gram positive cocci.

- a) What is the most likely organism? *Streptococcus pneumoniae* 0.5
- b) Discuss the laboratory diagnosis. *Gram stain, culture on blood agar, optochin sensitivity, bile solubility, CAMP test, DNAase test* 1.5
- c) Name the vaccines used for its prevention. *Polysaccharide vaccine, Conjugate vaccine* 0.5
- d) Classify Streptococci on the basis of hemolysis. *Alpha, Beta, Gamma, Delta* 0.5
- e) What is CAMP test? *Group B Streptococcus* 0.5

Pneumonia
 Polysaccharide
 Conjugate
 Vaccine

Q7. A 10 year old child presented with fever, cough, and chest pain. On examination, tachypnea, hyperinflation, and wheezing were observed. Sputum examination revealed eosinophilic, club-shaped, multi-segmented, and motile organisms. The organisms were found to be sensitive to penicillin and erythromycin.

Q8. A 15 year old male child presented with fever, cough, and chest pain. On examination, tachypnea, hyperinflation, and wheezing were observed. Sputum examination revealed eosinophilic, club-shaped, multi-segmented, and motile organisms. The organisms were found to be sensitive to penicillin and erythromycin.

Microscopic	Bacterial	Toxigenic	Colonial
Wet mount preparation	Discolor, elong, Woodrow	→	Colonial morphology, motility, etc.
Gram stain, culture	Increased, thin, yellow, gelatinous, grey	→	Colony morphology, etc.

By AH

Proteinase

02 02 04



Department of Pathology
Ara Mahed Medical College
Grand Test-3, 04 Feb 2020
VIHBS 3rd Year (1000)
[Special Bacteriology-1]

Time Allowed: 90 min

Total Marks: 50

Name: 139
Roll No: _____
Date: _____

Instructions:
1. All subjective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
2. Best hand written and use of margins will increase the outlook and presentation of your paper.

Attempt all Questions. Each Question carries 5 marks

Q1. A 15 years young boy presented in emergency with locked jaw and ophisthotonus. He was in respiratory distress and was unable to breathe properly. His attendants told that he had a history of fall from a tractor with some minor abrasions and lacerations.

Tetanus

- a) What are the diagnosis and the causative agent? 0.5
- b) What is the typical appearance this organism on gram staining? Tetani's racket 0.5
- c) Discuss the pathogenesis of this disease. 1.5
- d) Name the three other species of this organism and diseases caused by them. 1.5
- e) What protocol should be followed in emergencies regarding the prevention of the disease after a minor and major injury? Tetanus Toxin 0.1

Wound should be clean

Q2. A 10-year-old girl was brought to the emergency room by her parents because of fever and loss of appetite for past 12hrs and difficulty in arousing her for the past 2 hours. Her temperature was 39.5°C pulse 130/min, respiratory rate was 30/min. Blood pressure was 110/60mm hg. Lumbar puncture was performed showing cloudy CSF. Gram staining showed neutrophils along with gram negative diplo. cocci which were oxidase positive.

- a) Name the disease & the causative agent. Neisseria meningitidis 0.5
- b) Enlist the virulence factors of this bacterium. capsule polysaccharide Polys TGF endotoxin 0.5
- c) Tabulate the differences in the CSF of viral, bacterial and tuberculous meningitis? 1.5
- d) Enlist the diseases caused by Neisseria gonorrhoea. 1.5
- e) Name one organism each causing meningitis in following age groups: 0.5
 - i. Neonates W
 - ii. children and Adults Staphylococcus Pneum

Q3. An adult female developed edema of face (periorbital edema) and ankles accompanied by smoky urine and raised blood pressure, 2 weeks after an acute attack of cellulitis. Blood culture revealed Beta hemolytic Streptococci that were Bacitracin sensitive.

Streptococcus Pyogenes

- a) Name the causative agent and the disease. 0.5
- b) Explain the pathogenesis of the disease with the virulence factors. 2.5
- c) What is Lancefield grouping of Beta hemolytic Streptococci? 0.1
- d) Classify Streptococci on the basis of hemolysis. 0.1

Alpha hemolysis Beta Gamma



Dr. P. Srinivasulu Reddy
NPPS, Hyderabad
Grand Test-4, 3rd March 2016
MBSB 2nd year (SSCI)
(Special Bacteriology - I & II)

Time Allowed: 60 min

Total Marks: 30

Name: _____

Roll No: _____

Date: _____

Instructions:

1. All subjective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
2. Neat hand writing and use of margins will increase the outlook and presentation of your paper.

Attempt all Questions. Each Question carries 5 marks

1. Soon after birth, an infant develops seizures, a marked irritability, poor feeding, and fever. The infant's birth records note a prolonged labor with premature rupture of membranes. Gram stain of lumbar puncture revealed Gram positive cocci in chains, that later proved out to be beta hemolytic.
 - a. Name the causative agent and the disease. (1)
 - b. Discuss the laboratory diagnosis. (2)
 - c. What are the diseases caused by *Streptococcus pyogenes* according to pathogenesis? (2)
2. A lady complains of pain during sexual intercourse and irregular inter-menstrual bleeding. She has also begun to experience lower abdominal pain. A pelvic exam reveals a yellow mucro-purulent discharge; during the examination, the cervix begins to bleed. Gram stain of discharge reveals Gram negative intracellular diplococci. The teenager reports that she has been sexually active with several partners over the last year. One of her partners, a male, comes to the same clinic complaining of dysuria and profuse yellow urethral discharge.
 - a. What is the most probable cause of her symptoms? Name the causative agent and the disease. (1)
 - b. Enlist the virulence factors of the causative agent. (1)
 - c. Enlist the diseases caused by this organism. (1.5)
 - d. Name 2 oxidase positive bacteria. (1)
 - e. Name the culture media used for diagnosis. (0.5)
3. A series of patients in a small town visit the hospital complaining of bloody diarrhea, fatigue, and confusion. Physical exams reveal neurological deficits, and laboratory tests show anemia, thrombocytopenia, and uremia. Peripheral blood smears show fragmented RBCs, showing hemolysis. After careful questioning, the doctors discover that each patient ate the same fast-food burgers. It was found out to be a gram negative rod showing yellow (acidic) slant and yellow (acidic) butt on TSI.
 - a. Name the causative agent. (0.5)
 - b. What is the most probable complication? (0.5)
 - c. Discuss the pathogenesis of the organism. (1.0)
 - d. Name the strains of this bacterium. (1.5)
 - e. Classify gram negative rods on the basis of Lactose fermentation. (1)

Department of Microbiology
Azra Nahed Medical College
Grand Test-4, 3rd March 2020
MBBS 2nd Year (SEO)
(Special Bacteriology 1 & 2)

Allowed: 60 min

Total Marks: 30

Instructions:

1. All subjective questions are to be attempted on the paper and returned to the invigilator within specified time after you have received the question paper.
2. Neat hand writing and use of margins will increase the outlook and presentation of your paper.

Name: 139
Roll No: _____
Date: _____

Attempt all Questions. Each Question carries 5 marks

Soon after birth, an infant develops seizures, a marked irritability, poor feeding, and fever. The infant's birth records note a prolonged labor with premature rupture of membranes. Gram stain of lumbar puncture revealed Gram positive cocci in chains, that later turned out to be beta hemolytic.

- a. Name the causative agent and the disease. (1)
- b. Discuss the laboratory diagnosis. (2)
- c. What are the diseases caused by *Streptococcus pyogenes* according to pathogenesis? (2)

A lady complains of pain during sexual intercourse and irregular inter-menstrual bleeding. She has also begun to experience lower abdominal pain. A pelvic exam reveals a yellow muco-purulent discharge; during the examination, the cervix begins to bleed. Gram stain of discharge reveals Gram negative intracellular diplococci. The teenager reports that she has been sexually active with several partners over the last year. One of her partners, a male, comes to the same clinic complaining of dysuria and profuse yellow urethral discharge.

1. What is the most probable cause of her symptoms? Name the causative agent and the disease. (1)
2. Enlist the virulence factors of the causative agent. (1)
3. Enlist the diseases caused by this organism. (1.5)
4. Name 2 oxidase positive bacteria. (1)
5. Name the culture media used for diagnosis. (0.5)

A series of patients in a small town visit the hospital complaining of bloody diarrhea, fatigue, and confusion. Physical exams reveal neurological deficits, and laboratory tests show anemia, thrombocytopenia, and uremia. Peripheral blood smears show fragmented RBCs, showing hemolysis. After careful questioning, the doctors discover that each patient had the same fast-food burgers. It was found out to be a gram negative rod showing yellow "acidic" tint and yellow (acidic) butt on TSI.

1. Name the causative agent. (0.5)
2. What is the most probable complication? (0.5)
3. Discuss the pathogenesis of the organism. (1.5)
4. Name the strains of this bacterium. (1.5)
5. Classify gram negative rods on the basis of Lactose fermenting. (1)

17. A 27-year-old female developed postpartum endometritis few days after giving birth to a baby boy. She was found to have a positive culture of a gram positive, beta hemolytic bacteria that were Bacitracin resistant. Name the causative agent.

- a. *S. aureus*
- b. viridans group
- c. *S. pneumoniae*
- d. *S. agalactiae*
- e. *S. pyogenes*

18. A young patient developed necrotizing fasciitis, with no history of any chronic illness. The organism obtained on blood culture was Beta hemolytic, Lancefield group A. What is the causative agent?

- a. *S. aureus*
- b. *S. pyogenes*
- c. *S. epidermiditis*
- d. *S. pneumoniae*
- e. viridans group

19. A 48-year-old alcoholic man was admitted to a hospital because of stupor. He lives with homeless. His temperature was 38.5°C, and his blood pressure 125/80 mm Hg. He moans when attempts were made to arouse him. He has positive Kernig and Brudzinski signs, suggesting meningeal irritation. Chest radiography shows left lower lobe lung consolidation. An endotracheal aspirate yields rust-colored sputum. Examination of a Gram-stained sputum smear shows numerous polymorphonuclear cells and gram-positive lancet-shaped diplococci. Based on this information, the likely diagnosis is

- a. Pneumonia and meningitis caused by *Staphylococcus aureus*
- b. Pneumonia and meningitis caused by *Streptococcus pyogenes*
- c. Pneumonia and meningitis caused by *Streptococcus pneumoniae*
- d. Pneumonia and meningitis caused by *Enterococcus faecalis*
- e. Pneumonia and meningitis caused by *Neisseria meningitidis*